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ABSTRACT

Two elementary schools in the Kansas City, Missouri, School District have been in operation for 5 years as Applied Learning Magnet Schools (ALMS). The ALMS are math and science magnet schools that emphasize skills in math, science, reading, language arts, and social studies. This report examines ALMS student achievement and enrollment during 5 years of operation under a court-ordered desegregation plan. Covering the years between 1986-87 and 1990-91, the report presents achievement gains or losses as measured by the Iowa Tests of Basic Skills (ITBS) and Missouri Mastery and Achievement Test. In addition, data on enrollment, racial composition, and extended-day participation are presented. Highlighted findings include the following: (1) ITBS achievement outcomes for students in the ALMS generally remained above national and district norms; (2) minority students typically performed above the national norm in language and science, and, to a lesser extent, in math; (3) nonminority students were above the national norm in reading, language, math, and science at all grade levels; (4) only the achievement data in science suggested a narrowing of the achievement discrepancy between minority and nonminority students; (5) ALMS students typically outperformed traditional school students in all content areas; (6) the ALMS program met its desegregation goals, with 41.3% nonminority enrollment; and (7) mean classroom enrollments indicated that class size was in compliance with guidelines. (AC)

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Achievement and Enrollment Evaluation of the Applied Learning Magnet Elementary Schools

1990-1991

Mr. Jay Atwater
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Program Evaluators

December 1991

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ACHIEVEMENT AND ENROLLMENT EVALUATION OF THE APPLIED LEARNING MAGNET ELEMENTARY SCHOOLS

1990-1991

Introduction

As specified in the *Long-Range Magnet School Plan* (Hale & Levine, 1986), evaluations of programs funded by the desegregation court order occur in three year cycles. The first three years of program implementation include two formative evaluations (years one and two) and conclude with a summative evaluation in year three. The following three year cycle includes two years (years four and five) of achievement and enrollment summaries and concludes with a summative evaluation in the sixth year. The Applied Learning Magnet (ALM) schools, Swinney and Volker elementary, completed their fifth year of implementation at the end of the 1990-1991 academic year. Following a brief discussion of the applied learning program, and a description of the evaluation research design, this report will present achievement and enrollment longitudinal trends across the last five years at the two ALM schools.

Program Description

During the 1990-1991 school year, the Swinney/Volker applied learning Magnets were in the fifth year of implementation as a part of the court-ordered desegregation *Magnet School Plan* (Kansas City, Missouri School District, 1986). Swinney, for kindergarten and first through third grade students; and Volker, for fourth and fifth grade students, comprise the Applied Learning Magnets which were categorized by the *Long-Range Magnet School Plan* (Hale & Levine, 1986) as math/science magnets.

There are nine elementary math/science schools. The Southwest Cluster Investigative Learning Magnets are housed at Hartman (K, 1-2), Cook (3-4), and Marlborough (5-6). The newest grouping of math/science elementary schools is one composed of Gladstone Academy, Three Trails, Weeks, and Wheatley. Each of these four schools services students in grades K-5. The three groups of schools have a specific program outlined in the *Magnet School Plan* or the *Long-Range Magnet School Plan.*

This report focuses on the Swinney/Volker Applied Learning Magnets. Following a description of the program and a brief discussion of the design of the study, the report will address the results

of the study and the conclusions drawn from the results. Even though the Swinney/Volker schools were designated as math/science magnets, a number of special foci were prescribed for the program by the *Magnet School Plan* (Kansas City, Missouri School District, 1986). The court-ordered plan for Swinney/Volker defined a heavy emphasis on opportunities for students to apply the skills they have learned in their study of math, science, reading, language arts, and social studies. Additional opportunities for learning enrichment in an extended day program, extended year program (summer enrichment), and field trips are offered.

Evaluation Research Design

This report examines the Applied Learning Magnet (ALM) program achievement and enrollment during five years of operation under the court-ordered desegregation plan. Data for years 1986-1987 through 1990-1991 will be reported. The emphasis of this report will be on the effectiveness of the program in terms of achievement outcomes, as measured by the Iowa Tests of Basic Skills (ITBS) and the Missouri Mastery and Achievement Test (MMAT), and enrollment, racial composition, and pupil-to-teacher ratio data.

ITBS achievement performance for ALM students will be compared statistically to a random sample of students from traditional elementary schools. These data may suggest achievement domains where ALM students' performance differs from their non-magnet district peers, as well as areas in which no differences in achievement performance exist. Lastly, minority and non-minority achievement trends for kindergarten cohorts, who have received at least three years of continuous exposure to the magnet theme, will be examined. These data will provide evidence of the presence of, or lack of, a program effect on achievement for those students in the program the longest.

The achievement and enrollment evaluation was designed to answer the following questions:

1. What are current and past student achievement levels in the program?
2. Do student achievement data indicate a narrowing over time of the achievement discrepancy between minority and non-minority students?
3. Are there differences in the levels of student achievement when ALM students are compared to traditional elementary school students?
4. Has the program (and the schools) met the established goals for minority and non-minority enrollment?
5. Has the program complied with class size (pupil-to-teacher) limits on student enrollment?

Results

ITBS Achievement

Tables 1A (reading and language arts) and 1B (math and science) detail ITBS percentile ranks by grade level and minority status for students at ALM schools for the last six test administrations. Overall, in 1991 it can be seen that, with the exception of first and second graders in math, ALM

Table 1A
Applied Learning Magnet Schools
ITBS Percentile Ranks

School	Reading								Language							
							Dist.	Natl.							Dist.	Natl.
Grade / Ethnic	1986	1987	1988	1989	1990	1991	1991	Norm	1986	1987	1988	1989	1990	1991	1991	Norm
Swinney																
Kindergarten	---	---	84	83	81	---	---	---	---	---	61	68	65	62	61	50
Minority	---	---	81	73	75	---			---	---	50	58	52	49		
Non-Minority	---	---	88	91	86	---			---	---	71	79	77	76		
First	70	75	52	54	62	57	53	50	66	74	74	75	79	76	73	50
Minority	68	57	43	49	48	46			62	61	82	72	65	66		
Non-Minority	72	86	70	67	76	71			72	86	68	80	89	84		
Second	66	70	65	65	57	62	50	50	72	73	70	73	70	70	64	50
Minority	59	63	45	54	51	45			68	66	57	66	66	60		
Non-Minority	74	76	82	79	69	80			76	79	82	81	76	83		
Third	59	58	45	59	58	54	44	50	56	69	61	69	73	69	57	50
Minority	46	48	36	36	44	43			47	61	59	59	67	65		
Non-Minority	82	68	55	79	75	69			71	75	67	79	83	77		
Volker																
Fourth	57	66	52	51	57	59	39	50	64	49	60	64	70	68	49	50
Minority	44	56	39	42	41	51			54	43	54	60	62	62		
Non-Minority	78	74	70	62	77	67			79	64	69	69	79	74		
Fifth	65	52	53	56	51	60	40	50	72	63	56	63	66	70	48	50
Minority	59	36	45	50	41	44			66	56	48	60	58	60		
Non-Minority	75	67	62	68	64	78			78	72	62	71	77	82		

Note: Percentiles were converted from mean grade equivalent scores.

[1] The Science portion of the ITBS was not tested in the district until 1988. Kindergarten students are not given the Science portion of the ITBS.

Table 1B
Applied Learning Magnet Schools
ITBS Percentile Ranks

School / Grade / Ethnic	Math								Science[1]					
	1986	1987	1988	1989	1990	1991	Dist. 1991	Natl. Norm	1988	1989	1990	1991	Dist. 1991	Natl. Norm
Swinney														
Kindergarten	—	—	73	68	66	64	64	50	—	—	—	—	—	—
Minority	—	—	60	56	53	54			—	—	—	—	—	—
Non-Minority	—	—	84	85	81	81			—	—	—	—	—	—
First	52	68	61	64	66	64	65	50	67	74	79	75	67	50
Minority	42	52	53	56	52	55			55	67	65	67		
Non-Minority	63	83	75	80	81	77			82	84	89	83		
Second	63	66	70	70	52	59	64	50	70	67	64	67	58	50
Minority	58	58	47	61	45	47			56	57	53	55		
Non-Minority	68	75	88	78	66	76			82	80	80	81		
Third	57	59	50	59	65	55	48	50	63	67	66	64	59	50
Minority	43	51	42	43	50	47			53	54	58	56		
Non-Minority	78	67	59	78	84	67			74	80	79	74		
Volker														
Fourth	59	68	57	61	71	62	45	50	62	65	72	66	55	50
Minority	49	62	52	50	56	54			50	57	62	60		
Non-Minority	75	74	68	74	85	73			77	74	83	73		
Fifth	73	54	53	59	59	59	41	50	58	62	63	61	53	50
Minority	68	41	44	54	50	44			50	56	54	50		
Non-Minority	80	66	61	69	72	77			65	71	75	75		

Note: Percentiles were converted from mean grade equivalent scores.

[1] The Science portion of the ITBS was not tested in the district until 1988. Kindergarten students are not given the Science portion of the ITBS.

students achieved at levels equal to or greater than the district and national norms in all grades and content areas examined.

When minority and non-minority students at each grade level were compared to the national norm for each content domain tested in 1991 it was found that minority students equaled or exceeded the national norm in reading (grade four); language (grades one through five); math (kindergarten, first, and fourth); and science (first through fifth grade). Similarly, non-minority students equaled or exceeded the national norm at all grade levels in each of the four content areas tested.

Changes, either positive or negative of ten or more percentile points, from 1986, or the first year of test data, to the current year, were examined for minority and non-minority students in the four content domains.

The results of year to year comparisons indicated that grade level changes from 1986 to 1991 were quite drastic at some grade levels and for both minority and non-minority students. While it was expected that fluctuations across years would be found, given the varying ability levels of different classes of students, it was also expected that scores would not vary more than +/- 10 percentile points. As such, rather large differences between the 1991 students and their peers in 1986 were unexpected.

Large percentile point (pp) differences favoring 1986 students were found in reading scores for minority students at the first (22 pp), second (14 pp), and fifth (15 pp) grades. Similarly, large differences favoring 1986 students in reading were found for non-minority students at the third (13 pp) and fourth (11 pp) grades.

Language scores were less variable with only two grades demonstrating substantial differences between 1986 and 1991 students. Differences favoring 1991 students were found for non-minority students at the first grade (12 pp) and for minority students at the third grade (18 pp).

Mathematics ITBS scores were also quite variable from 1986 to 1991. At the first grade, both minority and non-minority students in 1991 had scores substantially higher than their 1986 peers (minority: 13 pp; non-minority: 14 pp). Alternately, minority students in 1991 had lower scores than did 1986 minority students at the second (11 pp) and fifth grade (24 pp). Non-minority students in 1991 had lower scores at the third grade (11 pp).

Lastly, science scores were relatively stable from 1988, the first year of district science testing, to 1991. Minimal or no differences were found at the second and third grades. Large differences for minority students, favoring 1991 students, were found at the first (12 pp) and fourth (10 pp) grades. Non-minority students in 1991 outperformed their 1986 peers at the fifth grade (10 pp).

ITBS achievement trends. Since 1986-87, three kindergarten classes have completed at least three years of education in the Applied Learning magnet program. These three classes have been tracked from grade to grade to see if differences in achievement levels exist, in part, as a function of length of exposure to the magnet program. As such, the cohorts, each representing the achievement performance of **only** those students who started kindergarten in the Applied Learning program and who have completed a minimum of three **consecutive** years of education in the magnet program,

detail the impact of long-term exposure to the magnet program. Additionally, the cohort results are disaggregated into minority and non-minority groups.

As a matter of note, the percentile ranks reported in the figures represent the relative standing of Swinney/Volker students when compared to that of the national norm group. As such, an upward directed trend line would suggest that Swinney/Volker students have scores improving at a rate greater than that of the national norm group. The reader is encouraged to examine the cohort trend lines on the following pages with two questions in mind: a) Do the trends indicate improving performance relative to that of the norm group and; b) Do the trend lines for minority and non-minority students converge, suggesting a reduction in the achievement discrepancy between these two groups?

Lastly, the reader should note that 1987 kindergarten scores were not available in district test files as of the time of manuscript development. Currently, this situation is being examined internally.

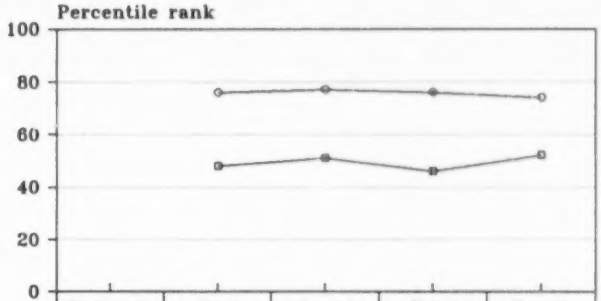
Reading. Across the three cohorts examined, reading achievement historically has been relatively stable or declining, relative to the norm group, over time (see Figures 1A to 1C). While the 1987 cohort has had only minor fluctuations in achievement over time, the 1988 and 1989 cohorts had declines from kindergarten to first grade and typically increasing performance from the first to the second grade.

The minority and non-minority trend lines represent similar patterns of change across time. In terms of the 1988 and 1989 cohorts, the achievement discrepancy was minimal at kindergarten but has widened as students passed from grade to grade. Alternately, the 1987 cohort has had a slight narrowing of the achievement discrepancy from first to fourth grade. Most importantly, the typical pattern of parallel trend lines (e.g., both groups have increases or decreases at the same points) suggests that the magnet program has impacted both minority and non-minority reading achievement in a consistent and unbiased fashion. Lastly, with the exception of 1987 cohort minority students, both groups have remained at or above the national norm of 50 across years.

Language. Across the three cohorts examined, language achievement has been declining, relative to the norm group, over time (see Figures 2A to 2C). With the exception of a large gain from kindergarten to first grade the typical pattern of cohort achievement has been downward. While the 1987 cohort has had subtle changes in achievement over time, the trend suggests slightly lower scores relative to that of the norm group. The 1988 cohort had a sharp increase from kindergarten to first grade and typically decreasing performance from the first to the third grade.

Figure 1A

ITBS Reading Achievement Across Time: 1987 Kindergarten Cohort



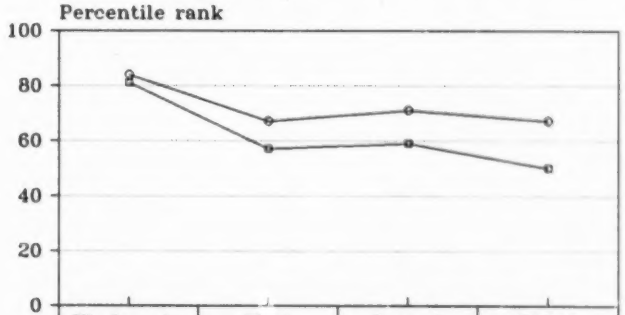
	Kindergrtn	First	Second	Third	Fourth
Minority	Not Avail.	48	51	46	52
Non-Minority	Not Avail.	76	77	76	74

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 1B

ITBS Reading Achievement Across Time: 1988 Kindergarten Cohort



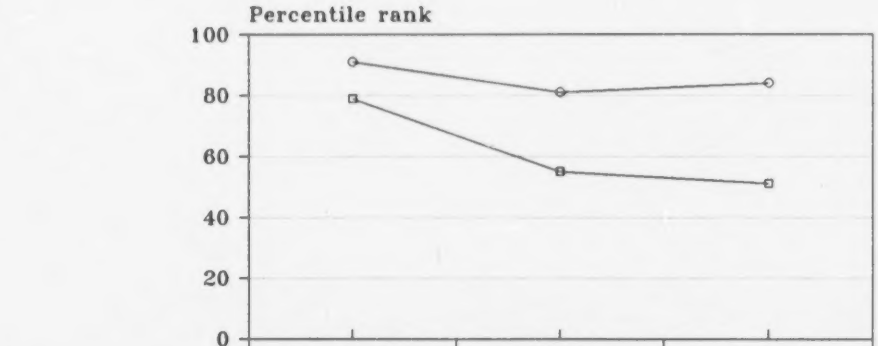
	Kindergrtn	First	Second	Third
Minority	81	57	59	50
Non-Minority	84	67	71	67

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 1C

ITBS Reading Achievement Across Time: 1989 Kindergarten Cohort



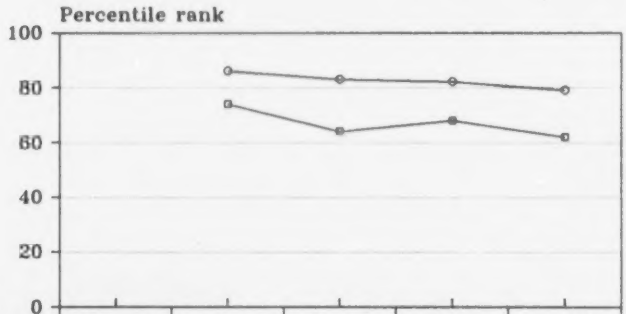
	Kindergrtn	First	Second
Minority	79	55	51
Non-Minority	91	81	84

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 2A

ITBS Language Achievement Across Time: 1987 Kindergarten Cohort



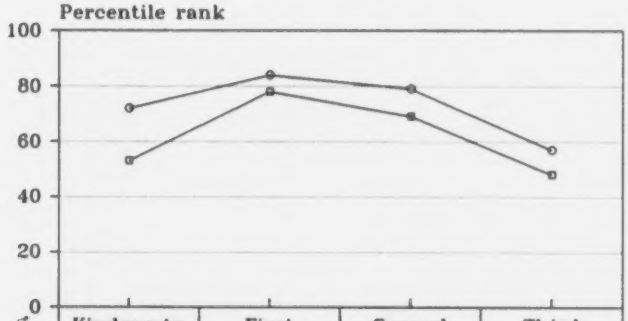
	Kindergarten	First	Second	Third	Fourth
Minority	Not Avail.	74	64	68	62
Non-Minority	Not Avail.	86	83	82	79

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 2B

ITBS Language Achievement Across Time: 1988 Kindergarten Cohort



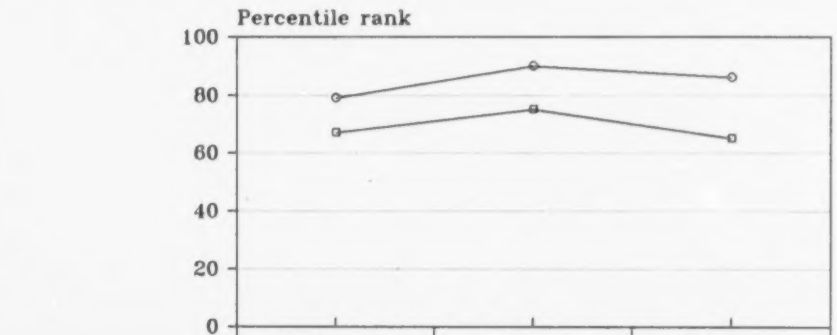
	Kindergrtn	First	Second	Third
Minority	53	78	69	48
Non-Minority	72	84	79	57

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 2C

ITBS Language Achievement Across Time: 1989 Kindergarten Cohort



	Kindergrtn	First	Second
Minority	67	75	65
Non-Minority	79	90	86

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

The minority and non-minority trend lines represent similar patterns of change across time. Again, as was found for reading achievement, minority and non-minority achievement gains and declines have mirrored each other suggesting the unbiased impact of the program. The achievement discrepancy appears to have narrowed slightly for the 1988 cohort but widened for the 1987 and 1989 cohorts. Lastly, with the exception of the 1988 minority cohort as third graders, both minority and non-minority students have remained above the national norm across years.

Mathematics. Math achievement across time, relative to the national norm group, has, for the 1987 and 1989 cohorts, remained relatively unchanged across years (see Figures 3A to 3C). Alternately, the 1988 cohort ended the third grade with percentiles below their kindergarten status.

Differences in minority and non-minority achievement have been reduced somewhat for the 1988 cohort as the discrepancy favoring non-minority students has diminished from 22 percentile points to 12 percentile points. Alternately, these same students have not been keeping pace with the growth of the norm group. The 1987 and 1989 cohorts continue to have a widening achievement discrepancy favoring non-minority students.

Lastly, students in each of the three cohorts have maintained percentile ranks above the national norm in each year tested. However, the lack of a clear pattern of increasing achievement performance relative to the norm group and the widening achievement discrepancy, regardless of magnitude, suggest a lack of a strong program effect in one of the magnet theme specialized content areas.

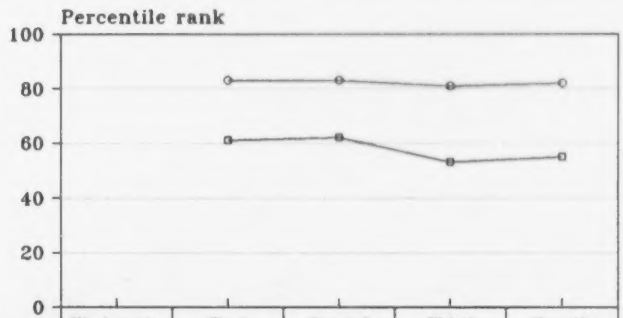
Science. Science achievement has not been measured in the district at the kindergarten level. As such, all scores reported begin with the first grade. Additionally, the district did not test science in other grade levels until the 1987-1988 test year.

Science, as math, is a target content area in the Applied Learning magnet theme. As such, performance in math and science would be a valuable outcome for examination of a specific program effect. Science achievement scores, more so than other test content examined, demonstrated positive program effects on student performance (see Figures 4A to 4C). 1987 cohort achievement was found to be relatively stable across time with only minor declines in the second and third grades. By the fourth grade, performance was again increasing relative to the norm group. The 1988 and 1989 cohorts were found to have had slight declines from first to second grade. The 1989 cohort, with only two data points, cannot be evaluated for trend patterns at this time. For the 1988 cohort a moderate increase was found from second to third grade.

The minority/non-minority achievement discrepancy was found to have narrowed in each of the three cohorts (1987-21 points to 17 points; 1988-19 points to 5 points; 1989-26 points to 25 points).

Figure 3A

ITBS Math Achievement Across Time: 1987 Kindergarten Cohort



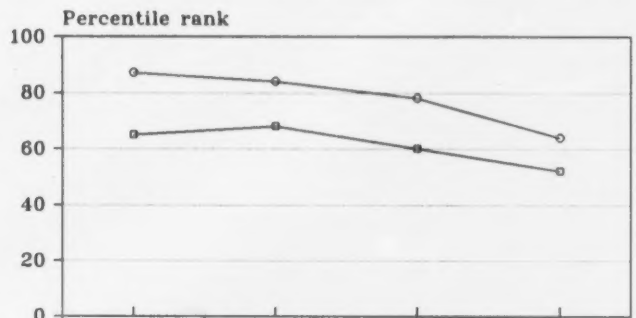
	Kindergrtn	First	Second	Third	Fourth
Minority	Not Avail.	61	62	53	55
Non-Minority	Not Avail.	83	83	81	82

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 3B

ITBS Math Achievement Across Time: 1988 Kindergarten Cohort



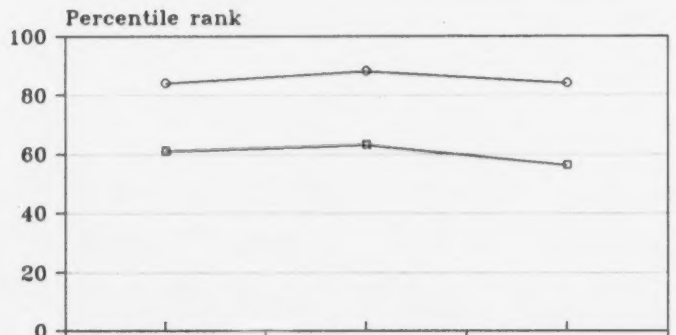
	Kindergrtn	First	Second	Third
Minority	65	68	60	52
Non-Minority	87	84	78	64

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 3C

ITBS Math Achievement Across Time: 1989 Kindergarten Cohort



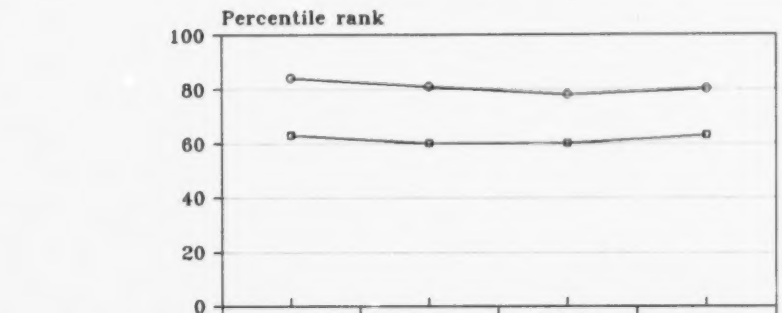
	Kindergrtn	First	Second
Minority	61	63	56
Non-Minority	84	88	84

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 4A

ITBS Science Achievement Across Time: 1987 Kindergarten Cohort



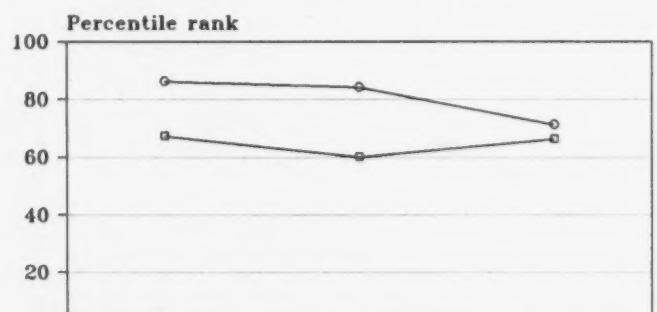
	First	Second	Third	Fourth
Minority	63	60	60	63
Non-Minority	84	81	78	80

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 4B

ITBS Science Achievement Across Time: 1988 Kindergarten Cohort



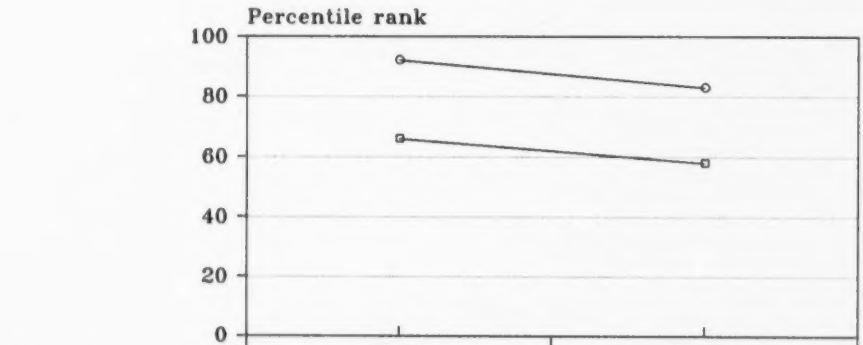
	First	Second	Third
Minority	67	60	66
Non-Minority	86	84	71

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Figure 4C

ITBS Science Achievement Across Time: 1989 Kindergarten Cohort



	First	Second
Minority	66	58
Non-Minority	92	83

Grade

Note: Percentile ranks are based upon mean grade equivalent scores.

Clearly, the most substantial reduction occurred for the 1988 cohort where achievement approached parity in 1991. Lastly, both minority and non-minority students performed above the national norm across cohorts and time.

ALM students compared with traditional school students. In order to examine the achievement performance of ALM students when compared with district traditional elementary school students, an analysis of covariance (ANCOVA) procedure was conducted to detect the presence of statistically significant differences in ITBS mean grade equivalent scores. A random sample, of traditional elementary students approximating the number of ALM test takers at each grade level was drawn as the comparison group. Mean grade equivalent scores, adjusted for the influence of ability as measured by the Cognitive Abilities Test (CoGAT), were converted to percentile ranks for presentation in this report.

ANCOVA requires the use of a covariate measure as a control to equalize ability influences on ITBS achievement. The covariate adjusts the ITBS score for ability differences among students prior to current year exposure to the magnet program. The CoGAT is administered in the third grade. As such, ability information was unavailable for use in the ANCOVA's for kindergarten, first, and second grade students. Consequently, a one-way analysis of variance (ANOVA), without the statistical control of a covariate, was conducted for these students. Summary data can be found in Tables 2A (reading and language arts) and 2B (math and science).

Statistically significant differences were found in each of the four content areas examined. In many cases ALM students were found to have larger adjusted grade equivalent means (and percentile ranks). Across all grade levels and content areas the comparison group did not outperform the ALM students. For the reading subtest ALM students had significantly higher scores at the second and fourth grades. Language arts scores were significantly higher for ALM students at the kindergarten, first, and fifth grades. When math achievement was examined, ALM kindergarten and fourth grade students outperformed the comparison group. Science achievement was found to differ significantly at the second and fourth grades, favoring ALM students.

The results indicated that at three grade levels (e.g., kindergarten, second, and fourth) ALM students outperformed the comparison group on two of four subtests. Kindergartners had higher scores in language and math; second and fourth graders had higher scores in reading and science. Again, comparison students did not demonstrate significantly larger achievement test scores in any of the content areas tested. Alternately, there were no significant differences between groups, at many grade levels and subtests.

Table 2A
Summary Data for the 1990-1991 ITBS Language & Reading Tests for Applied Learning Magnet and Randomly Selected Traditional Elementary Students

Test Grade Means	ALM Percentile Rank	Traditional Percentile Rank	Probability
Reading			
Grade 1			
Unadjusted mean	59	52	.463
Grade 2			
Unadjusted mean	63*	43	.001
Grade 3			
Unadjusted mean	51	52	
Adjusted mean	51	53	.647
Grade 4			
Unadjusted mean	61	43	
Adjusted mean	56*	48	.007
Grade 5			
Unadjusted mean	61	47	
Adjusted mean	56	52	.108
Language			
Kindergarten			
Unadjusted mean	62*	47	.001
Grade 1			
Unadjusted mean	77*	66	.037
Grade 2			
Unadjusted mean	72	60	.123
Grade 3			
Unadjusted mean	69	64	
Adjusted mean	68	65	.211
Grade 4			
Unadjusted mean	69	51	
Adjusted mean	63	58	.054
Grade 5			
Unadjusted mean	71	54	
Adjusted mean	66*	60	.005

Note: Analyses were done using grade equivalent scores. For presentation, these scores were converted to percentile ranks. When available, the Cognitive Abilities Test (CoGAT) scores were used as a covariate. For kindergarten, first and second grade students, CoGAT scores were not available to use in an analysis of covariance. The adjusted mean represents a statistical estimate of the students performance on the 1991 post-test assuming that the students had identical ability means on the CoGAT. This adjusted mean is computed during the analysis of covariance procedure.

* Difference at the $P \leq .05$ level of significance was found between the two groups on this test.

Table 2B

Summary Data for the 1990-1991 ITBS Math & Science Tests for Applied Learning Magnet and Randomly Selected Traditional Elementary Students

Test Grade Means	ALM Percentile Rank	Traditional Percentile Rank	Probability
Math			
Kindergarten			
Unadjusted mean	65*	51	.001
Grade 1			
Unadjusted mean	66	61	.08
Grade 2			
Unadjusted mean	66	57	.34
Grade 3			
Unadjusted mean	53	54	
Adjusted mean	54	53	.773
Grade 4			
Unadjusted mean	68*	48	
Adjusted mean	61	54	.008
Grade 5			
Unadjusted mean	61	46	
Adjusted mean	52	54	.489
Science			
Grade 1			
Unadjusted mean	78	71	.607
Grade 2			
Unadjusted mean	69*	45	.003
Grade 3			
Unadjusted mean	63	58	
Adjusted mean	61	61	1.00
Grade 4			
Unadjusted mean	70*	53	
Adjusted mean	66	58	.021
Grade 5			
Unadjusted mean	64	55	
Adjusted mean	59	61	.530

Note: Analyses were done using grade equivalent scores. For presentation, these scores were converted to percentile ranks. When available, the Cognitive Abilities Test (CoGAT) scores were used as a covariate. For kindergarten, first and second grade students,CoGAT scores were not available to use in an analysis of covariance. The adjusted mean represents a statistical estimate of the students performance on the 1991 post-test assuming that the students had identical ability means on the CoGAT. This adjusted mean is computed during the analysis of covariance procedure.

* Difference at the $P \leq .05$ level of significance was found between the two groups on this test.

MMAT achievement. The annual administration of the Missouri Mastery and Achievement Test (MMAT) for grade three students is presented in Table 3 for the 1987 to 1991 test years. Across four content domains, the typical trend has been to have increasing scores through the 1989 administration and decreasing scores thereafter. Swinney third graders, in 1991, had higher average scale scores in reading, math, science, and social studies than did the district as a whole and are very near the state average for Missouri.

Enrollment Goals

The Federal court has specified minority/non-minority enrollment goal achievement as a measure of the effectiveness of accomplishing desegregation reform. Enrollment at each grade level should reach 60% minority and 40% non-minority. If this goal cannot be achieved readily, schools may demonstrate desegregative progress through an improvement of at least a 2% modification toward the 60/40 goal. Enrollment figures cited in this report were drawn from the student membership reports prepared by the district's Research Office (see Table 4). Figures are based on enrollment data reported by the district on the fourth Wednesday in September.

Aggregated program enrollment reported by the Research Office for Swinney and Volker was 639 students. Of these, 41.3% were non-minority students. Accordingly, the Applied Learning program approximates the minority/non-minority ratio of 60%/40%.

Swinney grade level enrollment ranged from a low of 83 students in kindergarten to a high of 107 in grade two. Additionally, Swinney's non-minority enrollment stood at 43%. Grade level racial composition indicated that all grades approximated the Federal court guidelines of 60% minor-

Table 3
Missouri Mastery & Achievement Tests
Average Scale Scores-Swinney, Grade 3
Spring 1987, 1988, 1989, 1990, and 1991

Year	Reading/ Language Arts	Math	Science	Social Studies
1987	285	267	280	295
1988	297	295	284	285
1989	330	335	337	334
1990	313	327	320	326
1991	306	314	313	320
District 1991	274	289	290	286
State 1991	321	326	334	336

Note: Scores from 1988 and 1989 have been revised to correct errors in the State's scoring program.

Table 4

Minority & Non-Minority Enrollment for Swinney/Volker by Grade
September 1986, 1987, 1988, 1989, 1990, and 1991

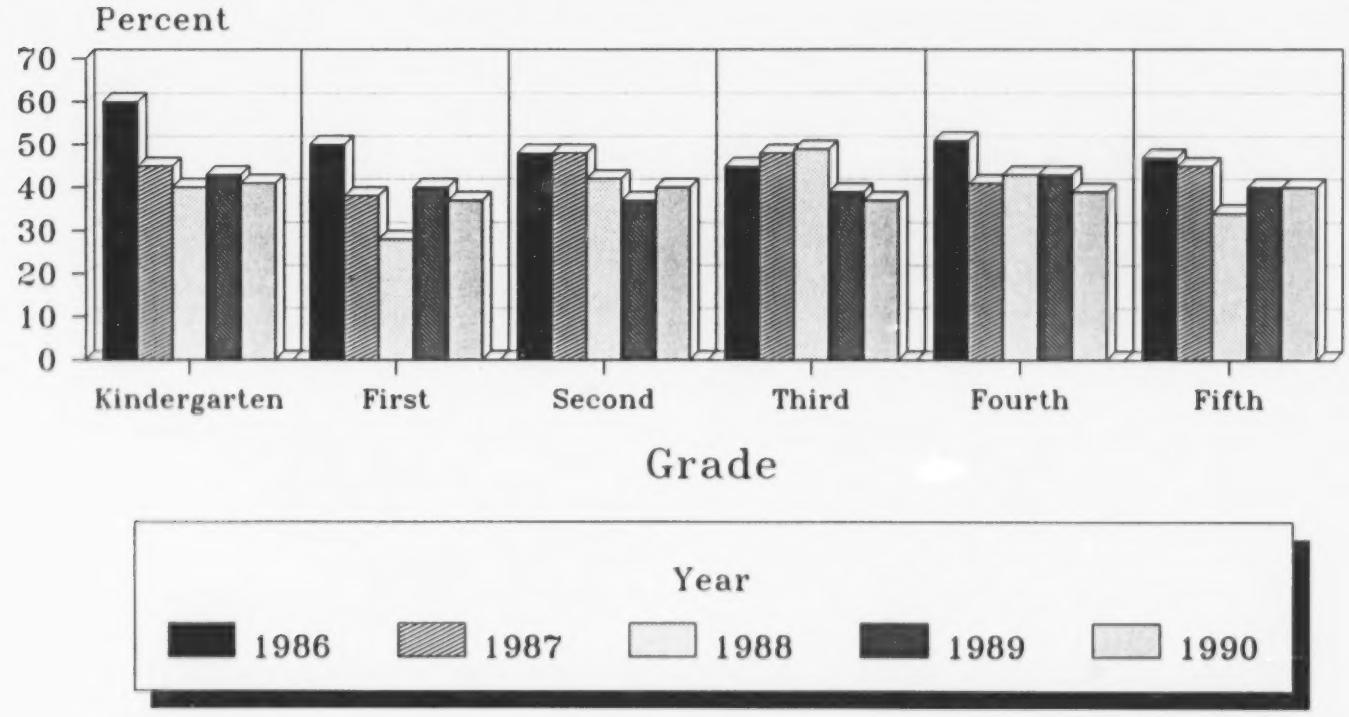
	September 1986				September 1987				September 1988				September 1989				September 1990				September 1991			
	Minority		Non-Minority		Minority		Non-Minority		Minority		Non-Minority		Minority		Non-Minority		Minority		Non-Minority		Minority		Non-Minority	
School Grade	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total
Swinney																								
Grade K	23	36%	41	64%	22	56%	17	44%	49	60%	32	40%	47	57%	36	43%	51	59%	36	41%	49	59%	34	41%
Grade 1	57	50%	58	50%	89	62%	54	38%	87	72%	34	28%	53	60%	36	40%	67	63%	40	37%	59	57%	47	43%
Grade 2	49	52%	46	48%	45	52%	42	48%	70	58%	50	42%	70	63%	41	37%	62	60%	42	40%	60	56%	47	44%
Grade 3	46	55%	37	45%	42	53%	38	48%	42	51%	40	49%	67	61%	43	39%	65	63%	39	37%	61	59%	43	41%
Grade 4	52	49%	55	51%	45	59%	31	41%	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
School Total	227	49%	237	51%	243	57%	182	43%	248	61%	156	39%	237	60%	156	40%	245	61%	157	39%	229	57%	171	43%
Volker																								
Grade K	29	45%	36	55%	19	54%	16	46%	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----
Grade 4	---	-----	---	-----	---	-----	---	-----	56	57%	43	43%	60	57%	46	43%	73	61%	46	39%	82	61%	53	39%
Grade 5	31	53%	27	47%	54	55%	45	45%	76	66%	39	34%	79	60%	52	40%	64	60%	43	40%	64	62%	40	38%
School Total	60	49%	63	51%	73	54%	61	46%	132	62%	82	38%	139	59%	98	41%	137	61%	89	39%	146	61%	93	39%

Note: Percentages are rounded to the nearest whole percent. Enrollment figures are from *A By-School Comparison of Student Enrollment by Rade & Grade for the Years 1986-87 & 1987-88* (Research Office, 1987); *September 28, 1988, Student Membership* (Research Office, 1988); *September 27, 1989, Student Membership* (Research Office, 1989), *September 26, 1990, Student Membership* (Research Office, 1990), and from *September 25, 1991, Student Census* (Admissions Office, 1991).

Figure 5

Applied Learning Magnet Program

Non-Minority Enrollment by Grade by Year



Note: Percentages are rounded to the nearest whole percent

ity/40% non-minority. Volker's two grades had a racial composition of 39% non-minority enrollment. Both grades approximated the Federal court guidelines.

Figure 5 details the non-minority enrollment trend from 1986 to 1990 in the Applied Learning magnet program. As can be seen in Table 4 and Figure 5, the program had slightly more non-minority than minority students in 1986. As such, the program was expected to make substantial modifications in racial composition to add minority students and reduce non-minority students. This trend is verified in Figure 5. Aside from a necessary large decline from 1986 to 1987 in non-minority enrollment, and moderate fluctuations across time, the program has achieved a relatively stable non-minority enrollment through the succeeding years.

Class size. The class size aspect of the 1985 court order was effective during the 1990-1991 school year. The court order stipulated a maximum of 22 students for kindergarten through grade three and a maximum of 27 students for grades four through six. The January 1991 school organization printout indicated that all classes at each of the grade levels at the two schools were in compliance with the class size order. Aggregated across both schools the mean class size by grade level was as follows: kindergarten: 22; first grade: 21.6; second grade: 22.2; third grade: 21.25; fourth grade: 23; and fifth grade: 26.7 students.

Extended Day. An extended-day program, which included before-school and after-school components was available to students at both schools. According to the *Magnet School Plan* (Kansas City, Missouri School District, 1986) for Swinney/Volker, the after-school extended-day program was to provide opportunities for applied learning in an additional learning setting. Total enrollment at Swinney was 317 students. Volker enrollment was 142 students. While racial composition of extended day participants was not reported by Swinney, the composition of Volker enrollment was 63 (44%) non-minority and 79 (56%) minority. Overall, the Applied Learning extended day program had 459 participants or 72% of the 639 total student body enrolled in extended day at Swinney and Volker.

Summary of Findings

The Applied Learning Magnet program has completed the fifth year of program implementation. The program has been successfully implemented at Swinney and Volker elementary schools. Past evaluation reports have verified the presence of the applied learning theme and have documented positive participant perceptions and organizational characteristics which have contributed to the current success of the magnet program. The current report has examined the program from the

restricted perspective of achievement and enrollment outcomes only. As such, the report examined five central questions regarding these outcomes. The findings are summarized below by each evaluation question explored.

1. *What are current and past student achievement levels in the program?*

   - **Generally above norms.** For the program as a whole student achievement has been typically above district and national norms for each of six ITBS test administrations. Changes over time indicated one grade level (second grade minority students) have had relatively lower performance than other grade levels in reading, language, math, and science. Alternately, non-minority second graders have performed above district and national norms in reading, language, and math. Non-minority fourth graders have consistently performed above norm in reading, language, math, and science. Overall minority and non-minority grade level performance indicated that minority students typically performed above the national norm in language and science, and to a lesser extent in math. Non-minority students were above the national norm in the four content areas tested at ALL grade levels.
   - Summarizing differences between 1986 and 1991 ITBS scores, the following patterns emerged:

     Kindergarten minority students -- lower scores in language and math.
     Kindergarten non-minority students -- higher scores in language; lower scores in math.

     First grade minority and non-minority students -- higher scores in language, math, and science; lower scores in reading.

     Second grade minority students -- lower scores in each content area.
     Second grade non-minority students -- higher scores in reading, language and math.

     Third grade minority students -- higher scores in language, math, and science.
     Third grade minority and non-minority students -- lower scores in reading.

     Fourth grade minority students -- higher scores in each content area.
     Fourth grade non-minority students -- lower scores in each content area.

     Fifth grade minority students -- no change or lower scores in each content area.
     Fifth grade non-minority students -- higher scores in reading, language, and science; lower scores in math
   - MMAT scores for Swinney third graders since 1987 had been increasing until the 1989 test administration. Since 1989, scores in reading, math, science, and social studies have been declining. Alternately, when 1991 scores were compared to district and state averages, Swinney third graders exceeded the district averages and were close to meeting the statewide average.

2. *Do student achievement data indicate a narrowing over time of the achievement discrepancy between minority and non-minority students?*

- **Partially.** READING -- Across three kindergarten cohorts reading achievement has been relatively stable or declining, relative to the national norm group, over time. Substantial declines from kindergarten to first grade were found. This may be, in part, a function of the influence of full day kindergarten which is provided to all district students. This is not the case in many school districts nationwide. As such, district kindergartners begin with an advantage and the decline in first grade may well be a leveling off to achievement levels in line with other first graders nationwide. Alternately, this may suggest that full-day kindergarten, while providing an initial achievement advantage, does not benefit students academically in the long term. Two of three cohort trend lines did not suggest a convergence of achievement performance. In fact, the achievement discrepancy favoring non-minority students in reading was found to be widened for 1988 and 1989 kindergartners. Alternately, both minority and non-minority reading performance, after a minimum of three years, remained above the national norm.
- LANGUAGE--Two of three cohorts had gains from kindergarten to first grade, an opposite trend found for reading achievement. However, after the first grade, the trend lines indicated declining performance relative to the national norm group. For one cohort (1988) the trend lines for minority and non-minority students have narrowed; suggesting increasing achievement parity after four years in the program. Both minority and non-minority language performance was above or near the national norm after at least three years in the program.
- MATH--Relative to the performance of the cohorts in reading and language, the math performance of these students has been stable. For two of three cohorts (1987 and 1989) math achievement has remained relatively unchanged across time. Non-minority performance hovered around the 80th percentile and minority performance typically exceeded the national norm. Alternately, the trend lines do not appear to be converging indicating that the achievement discrepancy between minority and non-minority students has not become more similar during program enrollment.
- SCIENCE--Science achievement trends appear to suggest a narrowing of the achievement discrepancy, even if only moderately, for each of the cohorts. Certainly, this is so for the 1988 cohort which was found to have narrowed the gap from 19 percentile points to 5 percentile points. Overall, the trend lines across time, while declining in some years, have remained relatively stable and do not suggest continuing declines in performance. It is difficult to assess the performance of the 1989 cohort as only two years of testing had been completed. Lastly, the 1988 cohort demonstrated the classic expectation of the effectiveness of a magnet program and the influence of desegregation on student achievement.

3. *Are there differences in the levels of student achievement when ALM students are compared to traditional elementary school students?*

- **Yes.** Results from analyses of variance/covariance indicated that ALM students typically outperformed traditional school students in the four content areas tested. While significantly higher means were found for ALM students in reading (grades second and fourth), language (kindergarten, first, and fifth), math (kindergarten and fourth), and science (grades second and fourth), traditional school

students did not outperform ALM students at any grade level or content area tested. Alternately, no differences in performance were found at many grade levels.

4. *Has the program (and the schools) met the established goals for minority and non-minority enrollment?*

   - **Yes.** Program-wide racial composition indicated that 41.3% of the students enrolled in the Applied Learning Magnet program were non-minority students. Across time, non-minority enrollment has remained relatively stable indicating the program's success at consistently attracting non-minority students to the district and from within the district. Grade level enrollments, while slightly above district guidelines for racial composition, were within the accepted range of 40% to 50% non-minority enrollment for successful desegregation.

5. *Has the program complied with class size (pupil-to-teacher) limits on classroom enrollment?*

   - **Yes.** Program-wide classroom enrollments indicated that at each grade level, each classroom enrolled less than or equal to the 22 student (kindergarten through third grade) or 27 student (fourth and fifth grades) limit. Mean classroom enrollments indicated that grade levels were each in compliance with the guidelines.

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